Author Index

Afroun, S. 209
Akasaki, M 237
Azuma, I. 29

Bakker-Woudenberg, I.A.J.M. 21
Baldinelli, L. 279
Bergmann, K.-Ch. 119
Bertók, L. 365
Bessler, W.G. 317
Beuscher, N. 329
Bianchi Salvadori, B. 279
Birr, C. 405
Blanchard, D.K. 259
Bohn, B. 405
Boisnic, F. 85
Bonina, L. 65
Bradaczek, H. 415
Brade, H. 143
Brade, L. 143
Bravo-Cuellar, A. 273

Canonico, P.G. 51
Cao, C.Y. 337
Capsoni, F. 393
Chang, H.-C. 135
Chedid, L. 3
Chun-Wang, T. 125
Congy, F. 249

Dagan, S. 323
Dahan, R. 103, 249
Derrien, D. 217
De Simone, C. 279
Devillechabrolle, A. 309
Di Fabio, S. 279
Dimov, V. 111
van Dissel, J.T. 203

El Abbouyi, A. 249
Ernwein, C. 329

Falkenberg, S. 135
Feldmann, M. 323
Flad, H.-D. 143
Fortier, M. 103
Fridkin, M. 323
Fridman, H. 259
Funckes, D.C. 351
van Furth, R. 203

Giroud, J.P. 249
Grand-Perret, T. 209
Grassi, P.P. 279
Greil, J. 267
Gruszecki, W. 415
Guenounou, M. 245
Guidi, G. 393

Hadden, J.W. 343
Hadjiivanova, N. 111
Halláková, E. 439
Hasegawa, A. 151

Helander, I. 143
Holst, O, 143
Homo-Delarche, F. 273
Horiuchi, A. 381

Iannello, D. 65
Iida, J. 29
Ishihara, C. 29

Jin, Y.F. 337
Jirillo, E. 279
Johannsen, L. 445
Jung, G. 317

Kende, M. 51
Kiso, M. 151
Klein, T.W. 259
Klimetzek, V. 429
Kohler, H. 135
Kondo, S. 143
Kopanski, L. 329
Kotani, S. 151
Kröger, H. 39
Krueger, J.M. 445
Kuhn, H.-M. 143
Kusumoto, S. 151

Labischinski, H. 415
Lam, C. 315
Lange, W. 39, 167
Laval, A. 103
Lederer, E. 73
Ledney, G.D. 351
Lemaire, G. 209
Lesourd, B. 309
Li, X.Y. 337
Liang, H.Z. 337
Lockhoff, H.Z. 337
Lokerse, A.F. 21
Loppnow, H. 143
Lotzová, E. 193
Lupton, H.W. 51

Macher, I. 357
Madonna, G.S. 351
Man-shing, S. 125
Marchiani, C. 249
Masaoka, T. 381
Masek, K. 11
Masihi, K.N. 39, 167, 179, 415
Mayer, R. 217
Mastroeni, P. 65
Midoux, P. 217
Ming-tak, C. 125
Minonzio, F. 393
Monsigny, M. 217
Moulias, R. 309
Muller, S. 135

Nebe, C.T. 405
Newton, C. 259
Neychev, H. 285
Niitani, H. 381
Nishimura, K. 29

Özel, M. 179
Ongari, A.M. 393
Ono, Y. 151
Opitz, H.G. 429
Orbach-Arboys, S. 273
Ota, K. 381

Paessens, A. 429
Paul, J.L. 249
Payee, Y. 125
Pawlak, R. 135
Perin, S. 245
Petit, C. 217
Petit, J.-F. 209
Pivel, J.P. 399

Raichvarg, D. 249
Rezzoug, F. 387
Ribi, E.E. 351
Rietschel, E.Th. 143
Roch-Arveiller, M. 249
Roche, A.C. 217
Röllinghoff, M. 267
Roerdink, F.H. 21
Rommain, M. 103
Rotta, J. 439

Sardina, E.E. 343
Schade, U. 143
Schlecht, S. 317
Schlumberger, H.D. 429

Schutze, E. 357
Shiba, T. 151
Siddiqui, W.A. 293
Siu-yin, W. 125
Smets, P. 85, 103, 245, 387
Snippe, H. 301
Solbach, W. 267
Stadler, P. 429
Streissle, G. 429
Stünkel, K.G. 429

Tam, L.Q. 293
Takashi, T. 237
Tokura, S. 29
Tong, L.M. 337
Toshkov, As. 111
Touraine, J.L. 387
Tsubura, E. 381
Tsujimoto, M. 151
Tsukada, W. 237
Tuduri, P. 399
Tzantzoglou, S. 279
Tzehoval, E. 323

Ulrich, J.T. 167
Une, T. 373

Vacheron, F. 245
Venegoni, E. 293
Vesely, R. 279
Vink-van den Berg, J.C. 21

Wang, A. 309
Wang, J.F. 337
Ward, R. 135
Widen, R. 259
Willers, J.M.N. 301
Woo, J. 125

Yamaguchi, F. 237
Yamamoto, Y. 259
Yamamura, Y. 29
Yee-shun, F. 125

Zähringer, U. 143
Zalisz, R. 85, 103
Zanussi, C. 393
Zaoral, M. 439
Zhu, P.P. 337
Zigterman, G.J.W.J. 301

Subject Index

Acanthamoeba culbertsoni, 76, 179
Aclacinomycin, 273
Acridine Hydrochloride derivative, 51
Adamantylamide dipeptide, 11
Adjuvant
  cell wall component, 317
  endotoxin, 148
  hexapranylacetyl-MDP, 35
  IL 1, 246
  Lactobacilli, 281,282
  MPL + TDM, 168
  nonioic block polymers, 301
  potent vaccine, 151
  RAS, 79
  RD-LPS, 367
  role of, 293
  TDM, 73,76
  therapy, 309
Ageing, 309, 135, 344
AIDS, 343–346, 365
Alum, 295
Ampicillin, 26, 90, 93
Antibacterial
  activity mediated by T lymphocytes, 282
  activity of TDM, 73
  defence, 112
  resistance, 22, 25
Antibody
  formation, 317
  producing cells, 337
  production, 35, 195, 323, 429
  synthesis, 86
Anti-idiotypic antibodies, 135
Antiparasitic
  activity, 73
  drug, 111
Antiviral activity
  AdDP, 16
  Immunomodulators, 51
  peritoneal macrophages, 71
  TDM, 73
Antiviral therapy, 346
Antitumor activity
  acylated MDPs and lipid A analogs, 157
  anti-idiotypic antibodies, 135
  IL-2, 196
  MDP + TDM, 418
  macrophage populations, 211
  RD-LPS, 368
  TDM, 73
  yogurt, 282
Arabino-galactan, 329
ARC, 343, 346–347
Aujeszky disease, 368

B lymphocytes, 86, 147, 245, 279, 309, 329, 387, 429
Babesia microti, 78, 180, 194
Bacillus anthracia, 443

Bacillus fragilis, 89
Bacterial lysate, 119
Bactericidal activity/capacity
  bacterial lysate, 119
  fixed macrophages of liver, 174
  macrophages (AM 3), 399
  macrophages (RU 41740), 87
  MDP-induced, 24–25
  peritoneal exudate cells, 169
  role of RU 41740, 108
  TDM and LPS, 209
Baptisia tinctoria, 329
BAY P 4581, 429
BGG, 203, 209, 316
  cell wall skeleton, 29, 171
  DNA fraction, 29
Benzamide, 39
  3-aminobenzamide, 41–42, 49
  protection against mouse hepatitis virus, 44–45, 48
Biological response modifiers, 217, 344
Biostim®, 103, 245, 249, 387, 393
  immune functions, 85
Bronchoalveolar lavage, 98, 119
Brucella abortus, 75, 399
BSA, 136, 217, 250, 301–302, 324–325

Cancer therapy, 193, 381
Candida albicans, 25, 34, 90–91, 97, 112, 274–275, 357–362, 405, 435
Candida utilis, 399
Carregeenan, 240–241, 379, 400
Cell-mediated immunity, 125, 245, 255
Chemiluminescence, 103, 105–106, 112, 115, 121, 249, 273–275, 283, 415, 419–421, 426, 430, 434
Chemotactic
  peptide, 250
  factor, 256
Chemotaxis, 88, 249, 356, 381
Chitin derivatives, 29
Chronic bronchitis, 85, 123, 245
Chronic viral hepatitis, 337, 340
Colony stimulating factor, 35, 89–90, 195, 237, 267, 356, 373
Combination acridine derivative and ribavirin, 52–53
  detoxified endotoxin and MDP, 152
  HS-BSA and NBP, 305–306
  immunomodulators and nativiral drugs, 62
  MDP and TDM, 40, 168
  MDP analogs and TDM, 425
  MPL and cell wall skeleton, 180
  MPL and MDP, 180
  MPL and TDM, 167, 171–176
  Poly (ICLC) and ribavirin, 59
  synthetic lipid A analogs and acylated MDPs, 151, 157–161
Complement, 337
Complement-dependent lysis, 197
Conjugate
  DAC, 218
  haptenated BSA, 301
  glyco, 218
  MAN-BSA-MDP, 217
  MDP, 226
  multiprenyl compounds and MDP, 35
  (NANP) 3-tetanus toxiod, 295
  tuftsin, 323
Corticosteroids, 223, 393, 399
Corynebacterium granulosum, 65
Corynebacterium kutscher, 35
Corynebacterium parvum, 60, 66, 71 402
Corynebacterium P 40 fraction, 65, 311–312, 314
Cryptococcus neoformans, 194
Cyclophosphamide, 90–91, 357, 359, 373, 400–402
Cyclopsporin A, 259
Cytokine, 35, 62, 193, 195–196, 259, 387
Cytomegalovirus, 194, 344–345, 425

Delayed type hypersensitivity, 12 31 66, 85, 87, 95, 103–104, 117, 128, 130, 245, 337, 401, 442
Desmuramyl peptides, 11
Diaminopimelic acid, 439, 441, 445

Diethyldithiocarbamate
see Imuthiol
Diplococcus pneumoniae, 120
DNCB, 87, 103–104
Drug targeting, 217

Electron microscopy, 114–115, 179–190, 366
MPL and TDM, 179
Encephalomyocarditis virus, 89, 91
Endocytosis, 217
Endotoxin, 39, 80, 142, 152, 168, 171, 179, 211, 346, 357, 365, 401
Entamoeba histolytica, 75, 179
ENT infections, 85
Epstein-Barr virus, 194
Escherichia coli, 34, 89, 91, 145–146, 148, 152–153, 174, 179, 184, 237, 279, 295, 317, 356, 357–360, 366, 399
Erysipelothrix rhusiopathiae, 90, 92, 103, 106–108, 112

Factor increasing monocytopoiesis, 203
Freund's adjuvant, 12, 76, 79, 136, 295–297, 317, 401
FK-156, 34, 439
Foot-and-mouth disease virus, 367
Friend leukemia virus, 194

Galactosamine, 40, 333
Ginseng, 125
Glucan, 114, 285, 399
Glucofuranose immunomodulator, 415–427
Glucosylamide, 429
Glycoprotein, 85, 245, 250, 267, 329, 390, 393, 429
Granulocyte, 193, 243, 267
Granulocyte-macrophage colony stimulating factor, 267

Haemophilis influenzae, 120, 302
Hemolysin, 337, 368
Hepatic necrosis, 41, 45
Hepatitis, 194, 337, 340
Hepatoprotective effect, 11
Herpes simplex virus (HSV), 25, 40, 65, 67–68, 81, 112, 194, 345, 426
HIV, 344, 346
Humoral
immunity, 92, 125, 138, 255
immune response, 301, 304
Hydrogen peroxide, 211, 214–215, 426
Hypoferremia, 357

Ia-encoded antigens, 323, 326
Idiotype, 135
Immunoadjuvant, 29, 294
adamantylamide dipeptide, 12
B-30 MDP, 155
LPS, 366
MDP, 12
peptides, 439
Immune system, 11, 51, 86, 273, 279, 344–346
regeneration, 365
Immunocompetence, 279
Immunodeficiency, 309, 343, 362, 365
Immunoenhancement, 317
Immunogenic effect, 323
Immunomodulating
agent(IL 2), 200
agent (RU 41740), 245, 249
drug, 329
effect (RU 41740), 103
effect (oxalysine), 337, 340
Immunomodulation, 65, 85, 365, 399, 429
Immunomodulator
aclacinomycin, 273
Biostim®, 85, 245, 233, 387, 393
endotoxin, 357
efficacy in humans, 309
glucofuranose, 415, 418
IRS 90,, 119
lipid A, 357
lipid X, 357
MDP, 39
MPL, 169–171, 179, 351
P 40, 65
phospholipase A 2, 273
pyran copolymer, 210

stimulation of natural immunity, 193
synthetic, 151, 218
TDM, 169–171, 179, 210, 351
treatment of viral infections, 51
Immunopharmacology, 343
Immunopotentiation, 279
Immuno response modifiers, 217
Immunorestoration, 405
Immunostimulation, 78, 103, 111, 180, 279, 287, 243
Immunosuppress, 399–401
Immunosuppression, 135, 262, 271, 362, 364
Immunosuppressive, 126, 131, 397
Immunotherapy, 343
Imuthiol, 311–314, 346–347
Indomethacin, 276, 384
Infection, 351
experimental, 85
local, 103
model, 259
Infectious bovine rhinotracheitis virus, 112, 425
Infectious diseases, 193, 343
Influenza, 16, 40, 85, 89, 91, 114, 168–169, 171–172, 179–180, 194, 309, 415, 419, 423–425
vaccine, 95, 155, 310
Inhibitors of ADPR transferase, 39
Interferon, 51, 65, 68, 89, 119, 122, 126, 193, 259, 345, 356, 381,
α, 29, 60, 61, 195, 264, 329
β, 29, 195, 329
δ, 195, 203, 210, 215, 263–267, 271, 279–281, 345, 358, 387
induction, 123, 329
Interleukin
1, 11, 35, 62, 88–89, 143, 148–149, 195, 217, 227, 243, 245, 259, 323–326, 345, 356, 358, 386, 387, 390, 435
2, 62, 89, 193, 268–170, 281, 309, 324, 326, 345–346
3, 267–279
Irradiation, 143, 285–286, 294, 367, 373, 387–388
Isoprinossine, 345–347
Isotripeptide, 439

Ketasserin, 17
Klebsiella pneumoniae, 34, 85, 91, 103, 111–113, 120, 180, 245, 250, 302, 351, 356, 368, 387, 393

Lactobacilli, 29, 279
LAK, 193, 345
LCM virus, 368
Legionella pneumophilia, 259
Leishmania donovani, 81
Leishmania enriettii, 215
Leishmania major, 267
Leishmaniasis, 267
Leukemia, 193
Leukocytes, 237, 249, 374, 381, 388, 393
Leukocytosis, 237
Leukopenia, 143, 239, 357, 373, 381
Levamisole, 29, 346
Lipid A, 29, 143, 168, 179, 357, 429
analogs, 146, 151
monophosphoryl, 79–80, 167, 179
monsaccharide, 357
structure-activity relationship, 147
synthetic, 146, 151
Lipid X, 357
3-aza-, 357
Lipoidal amine
CP-20, 961, 296
Lipooxygenase pathway, 273
Lipopolysaccharide, 79, 86–87, 143–144, 151, 168, 179, 209, 231, 245, 250, 279, 317, 333, 335–336, 336, 358, 360–361, 365, 387, 390, 402, 429
Lipoprotein analogs, 317, 429
Liposomes, 179, 181, 186, 188, 227, 296
hexaprenylacetyl MDP, 35
J-PE, 303, 305
MDP encapsulation, 21, 23, 25
MTP-PE, 79
Listeria monocytogenes, 21–27, 34, 75, 89, 91–92, 125, 128, 130–131, 167, 169, 174–175, 179–180, 184, 203, 356, 399–400, 402, 425

Lisuride, 14, 17
Lithium carbonate, 39, 41–42, 49, 385
LPS
see lipopolysaccharide
Lymphocyte transformation, 329, 337
Lymphokine, 131, 195, 218, 269–270 282
activated killer cells, 193, 345

Macrophage, 11, 51, 70, 78, 86, 193, 203, 209, 218, 245, 267, 323, 329, 346, 379, 386, 387, 429
activated, 167, 203, 210, 213
alveolar, 98, 111, 115–116, 119, 167, 172, 203, 210, 213, 217, 224, 227, 229
bone marrow-derived, 218, 362
cell line (J 744.1), 362, 418
cell line (P 388 D 1), 237, 241
cell line (PU 5.18), 260
elicited, 175, 211, 231, 435
inflammatory, 209–210, 215
killing, 259
peritoneal, 21, 88, 128–129, 176, 221, 225, 237, 260, 262, 274–275, 285, 418, 421–422, 435
phagocytic activity, 125, 188
primed, 210, 212
resident, 176, 203, 209–210, 213–214, 215, 218
Marlaria, 293
MDP, 11, 21, 29, 39, 76, 78, 114, 151, 157, 160, 168. 180, 217, 227, 237, 295, 317, 345, 373, 381, 415, 416, 425, 429, 439
analgesic activity, 15
comparison with WG-103, 416
encapsulation in liposomes, 21
immunoadjuvant activity, 12
influence upon NAD adenoribosylation, 39
macrophage activation by conjugates, 217
neuropharmacological activity 12, 15
protection against mouse hepatities virus, 45–46
synergistic effect with TDM, 78, 425
derivatives
acylated MDP, 151, 425
adamantylamide dipeptide, 11
aminobutyryl, 425
B-30 MDP, 78, 153, 155, 157, 159–160, 296
BH-48 MDP, 153, 155, 157, 160
glucofuranose, 415
isotripeptide, 439
MDP-L 18, 30–31, 154
MDP (L-L), 153, 157, 160
MDP-Lys (L 18), 29–30, 75, 80, 154–161, 237, 297, 373, 381
MDP (MeAla)-Lys (L 18) 154–157, 160
MDP-Thre, 76
multiprenyl-MDP, 29–30
murabutide, 34, 155
murametide, 39, 45–46, 48
MTP-PE, 34, 54–56, 58, 81, 172
seryl, 425
stearoyl-MDP, 29, 31, 78, 296
ubiquinone, 425
Measles, 194
Membrane lectins, 217
Methiotepin, 14, 17
Meth A fibrosarcoma, 151
Microbicidal activity, 125, 167
Micrococcus pyogenes, 120
Monkey
African green, 60–61
Aotus, 296–297
Rhesus, 94, 245–246, 295
Monoclonal antibody, 135, 197–198, 218, 259, 296, 330, 332
Monocytes, 85, 97, 115, 217, 303, 381
Monocyte-macrophage system, 399
Mononuclear phagocytic system, 111
Monophosphoryl lipid A, 79–80, 167–178, 179–190, 296, 351–356, 418, 421–422, 425

electron microscopy, 179
enhanced survival in irradiated mice, 351
nonspecific resistance, 167
Mouse hepatitis virus, 39
MPL
see monophosphoryl lipid A
Mumps, 194, 344, 425
Muramic acid, 445
Muramyl dipeptide
see MDP
Muramyl peptides, 11, 81, 445
estimate levels, 445
immunopharmacological properties, 11
see also MDP
Mycobacterium avium, 74
Mycobacterium bovis, 74, 168, 172, 210, 425
Mycobacterium leprae, 74, 325
Mycobacterium marinum, 215, 325
Mycobacterium microti, 215
Mycobacterium phlei, 74, 352–353
Mycobacterium smegmatis, 75
Mycobacterium tuberculosis, 74, 78, 114, 176, 215, 415, 418, 120, 425

NAD adenoribosylation, 39
Natural
cytotoxicity, 193
immunity, 65, 401
killer cells, 35, 51, 78, 86, 89, 126, 193, 255, 281–282, 344, 346, 400
Neisseria, 120, 302
Neoglycoproteins, 217
Neoplasia, 193
Nervous system, 11, 346
Network, 135
Neutrophils, 88, 239, 359, 381, 384
NK cells
see natural killer cells
Nonionic block polymers, 301
Nonspecific resistance
anti-infectious, 111
augment, 32
enhancement, 357
enhancing, 151, 365
increase, 351
induction, 143
mechanisms, 167
stimulation, 73, 76

Oligosaccharide-protein conjugates, 301
Ovarian cancer, 193
Oxalysine, 337
Oxadative burst, 429

Parainfluenza virus, 31, 40
Phagocytic
activity, 170–171, 273, 277, 360, 393
capacity, 128–129, 167, 169
cell, 85, 88, 393
function, 357, 359
Phagocytosis, 85, 103, 105, 119, 203, 285, 356, 381, 394–396, 415, 419, 421–422, 426
Phospholipase A 2, 273
Phosphorycholine, 135
Pichinde virus, 60–61
Plasmodium berghei, 78, 180
Plasmodium falciparum, 155, 293
Plasmodium species, 293
Plaque forming cell, 86, 127, 130, 336, 337–338, 432
Poly (ICLC), 51
Polymorphonuclear leukocyte, 88, 249, 259, 309, 323, 393
Polyols, 301
Polysaccharides, 285, 302, 307, 329, 399
Prostaglandin, 147, 273–274, 277
Proteus vulgaris, 368
Pseudomonas aeruginosa, 32, 34, 40, 89, 91, 357–362

Quinolinamine derivative, 51

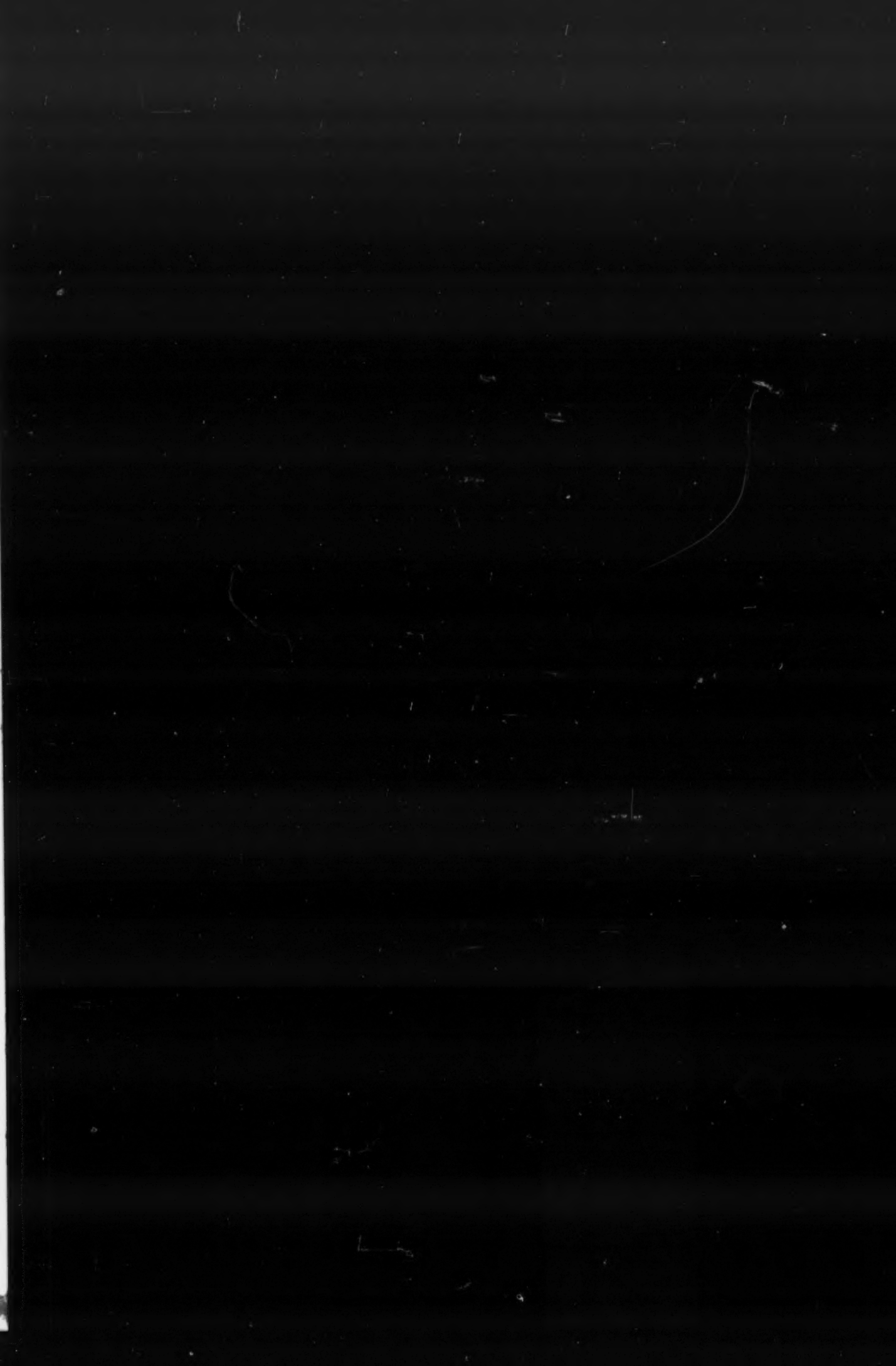
Radiation, 351, 365, 382, 384–385
Respiratory
recurrent infections, 119
syncytial virus, 334
tract, 85, 98, 119
RES
stimulation, 357

stimulatory activity of P 40, 70
TDM as activator, 81
fixed macrophages, 218
Rhinovirus, 345
Rhodococcus aurantiacus, 74
Rhodotorula glutinis, 285
Rhodotorula rubra, 285
Rubavirin, 81, 51
Rift valley fever virus, 51
RU 41740, 85, 103, 245, 249, 387, 393
see also Biostim®

Saccharomyces cerevisiae, 128–129
Salmonella, 280, 282
Salmonella adelaide, 318
Salmonella abortus equi, 358
Salmonella friedenau, 318
Salmonella inverness, 318
Salmonella minnesota, 143, 145, 152–153, 167–168, 318–319, 352, 418
Salmonella typhi, 91, 112, 180, 280
Salmonella typhimurium, 34, 65, 68–70, 89, 148, 152, 180, 203, 317, 333
Saponin, 125, 296
Schistosoma haematobium, 79
Schistosoma mansoni, 79, 180
Semliki forest virus, 40
Sendai virus, 29, 40, 117, 194, 425
Serotonergic receptor, 11
Setaria digitata, 76
Silica, 400
Sodium diethyldithiocarbamate, 311
see also Imuthiol
Squalane, 76–79, 169, 172–173, 175–176, 180–181, 183–185, 351–352, 354, 418, 421, 423–425
Squalene, 415, 417
Staphylococcus epidermidis, 174, 179
Sterptococcus faecalis, 120
Streptococcus pneumoniae, 91, 135, 137–139, 298, 301
Streptococcus pyogenes, 120
Streptococcus thermophilis, 279
Streptomyces olivaceogriseus, 440
Streptomyces roseoviridofuscus, 337
Superoxide, 25, 88, 119, 121, 249, 381, 426, 434
Suramin, 111
Swine, 90, 103
Synthetic
adjuvants, 29, 296
glycolopids, 429
lipid A and analogs, 146, 151
lipoprotein analogs, 317
muramyl peptides, 11
see also MDP and derivatives
trehalose diester, 73, 75, 168, 173
Synthesis
glucofuranose imminomodulators, 415, 417
immunoadjuvant peptides, 439–440
trehalose mycolates, 73

T cell replacing factor, 429, 432
T lymphocytes, 87, 131, 193, 237, 245, 259, 267, 279, 297, 309, 327, 329, 344, 346, 368, 379
TDM, 29, 40, 73, 167, 179, 209, 296, 351, 418, 421–422
electron microscopy, 179–190
enhanced survival in irradiated mice, 351
macrophage activation, 209
mechanism of action, 77
nonspecific resistance, 167
synergism with
cell wall skeleton, 78
LPS, 79
MDP, 78
MPL, 167, 179, 351
Thymic hormones
Thymil
hormones, 344, 346
peptides, 405
Thymosin 1, 345–346, 405
Toxoplasma gondii, 76–78, 167, 169–171, 179, 203
Transaminase
AST, 15–16
ALT, 15–16, 53, 55
GOT, 39, 41–46
GPT, 39, 41–46

Transmissive swine gastroenteritis virus, 112
Trehalose
  diesters, 73
  dimycolate
    see TDM
  monomycolate, 74, 168
  trimycolate, 74
Trypanosoma cruzi, 194, 267, 270
Trypanosoma musculi, 77, 180
Tryptophan, 39, 41–43
Tuftsin, 323
Tumor
  cytostasis, 415, 419, 421–422
  hemorrhagic necrosis, 151
  necrosis factor, 259, 345, 358, 401, 435
  regression, 151, 180

Vaccine, 120, 293, 301, 310, 317, 344
Vaccinia virus, 40, 194
Vesicular stomatitis virus, 194, 330

Yellow fever virus, 51
Yersinia enterocollitica, 112
Yersinia psuedotuberculosis, 112
Yogurt, 279